CLAIMS

ADD A_2

1. A flue gas treating system comprising an absorption tower for bringing flue gas into gas-liquid contact with an absorbing fluid to remove at least sulfur oxides from the flue gas by absorption into the absorbing fluid, a reheating section for heating the flue gas leaving said absorption tower to a temperature favorable for emission into the atmosphere, and a fan for delivering the flue gas under pressure so as to counteract the pressure loss caused by the flue gas flow path including said absorption tower and said reheating section,

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wherein said absorption tower, said reheating section and said fan are arranged in line on a vertical axis so as to function as at least a part of a stack for emitting the treated flue gas into the atmosphere.

2. A flue gas treating process comprising the denitration step of injecting ammonia into flue gas containing at least nitrogen oxides and sulfur oxides to decompose the nitrogen oxides present in the flue gas, and the desulfurization step of introducing the flue gas leaving said denitration step into an absorption tower where it is brought into gas-liquid contact with an absorbing fluid to remove at least the sulfur oxides from the flue gas by absorption into the absorbing fluid,

wherein ammonia is injected into the flue gas as required

at a point downstream of said denitration step, and

the amount of ammonia injected in said denitration step and/or the amount of ammonia injected at the point downstream of said denitration step are determined so as to be on such an excessive level that ammonia or an ammonium salt will remain in the flue gas introduced into said desulfurization step.

3. A flue gas treating process as claimed in claim 2 wherein the amount of ammonia injected in said denitration step is determined so that the concentration of ammonia remaining in the flue gas leaving said denitration step will be not less than 30 ppm.

4. A flue gas treating process as claimed in claim 2 which further includes the heat recovery step of introducing the flue gas leaving said denitration step into a heat exchanger on the upstream side of said absorption tower and thereby recovering heat from the flue gas and wherein a non-leakage type heat exchanger of shell-and-tube structure is employed as said heat exchanger.

5. A flue gas treating process as claimed in claim 2 or 4 which further includes the heat recovery step of introducing the flue gas leaving said denitration step into a heat exchanger on the upstream side of said absorption tower and thereby recovering heat from the flue gas and wherein the amount of ammonia injected in said denitration step and/or

the amount of ammonia injected at the point downstream of said denitration step are determined so that the concentration of ammonia remaining in the flue gas introduced into said heat exchanger will be in excess of the SO_3 concentration in this flue gas by 13 ppm or more.

6. A flue gas treating process as claimed in any of claims 2 to 4 wherein a region in which a liquid having higher acidity than the absorbing fluid is sprayed so as not to allow ammonia to be easily released into the gaseous phase is created on the downstream side of the region of said absorption tower in which the flue gas is brought into gas-liquid contact with the absorbing fluid, whereby the ammonia remaining in the flue gas introduced into said desulfurization step is absorbed in said absorption tower without allowing it to remain in the flue gas leaving said absorption tower.

7. A flue gas treating process as claimed in any of claims 2 to 4 which further includes the first dust removal step of introducing the flue gas into a dry electrostatic precipitator on the upstream side of said absorption tower and thereby removing dust present in the flue gas, and the second dust removal step of introducing the flue gas into a wet electrostatic precipitator on the downstream side of said absorption tower and thereby removing the dust remaining in the flue gas.

8. A flue gas treating process for purifying flue gas containing at least nitrogen oxides and sulfur oxides by using a flue gas treating system comprising a denitrator for injecting ammonia into the flue gas to decompose the nitrogen oxides present therein, a heat exchanger for recovering heat from the flue gas leaving said denitrator, an absorption tower for bringing the flue gas leaving said heat exchanger into gas-liquid contact with an absorbing fluid to remove at least the sulfur oxides from the flue gas by absorption into the absorbing fluid, a reheating section for heating the flue gas leaving said absorption tower to a temperature favorable for emission into the atmosphere by using at least a part of the heat recovered in said heat exchanger, and a fan for delivering the flue gas under pressure so as to counteract the pressure loss caused by the flue gas flow path including said absorption tower and said reheating section,

said absorption tower, said reheating section and said fan being arranged in line on a vertical axis so as to function as at least a part of a stack for emitting the treated flue gas into the atmosphere,

wherein ammonia is injected into the flue gas as required at a point downstream of said denitrator, and

the amount of ammonia injected in said denitrator and/or the amount of ammonia injected at the point downstream of said denitrator are determined so as to be on such an

excessive level that ammonia or an ammonium salt will remain in the flue gas introduced into said absorption tower.